

**The Strategic Work Zone Analysis Tool  
Steering Committee Meeting  
May 18, 2000**

▪ **Welcome and Introductions**

The Strategic Work Zone Analysis Tool (SWAT) Steering Committee met May 18, 2000 at the Federal Highway Administration (FHWA) – Turner Fairbank Highway Research Center in McLean, Virginia. FHWA Traffic Management Team Leader Raj Ghaman welcomed the group to the meeting. He said that work zone operation issues and safety are top priorities of the FHWA Administrator. Pointing out that one of the agency goals is to reduce stops and delays in work zones. The Steering Committee can become an integral part of the FHWA planning process by providing insight into the needs of the practitioners, said Ghaman.

Eighteen individuals representing private industry, associations, universities, state and Federal agencies participated in the daylong meeting. Also, two individuals participated via satellite from CalTrans in Sacramento, California. The group agreed to function as an ongoing Steering Committee that will meet on a quarterly basis ( Sept., Jan, and March) in various locations. The preference is a city that has major work zone projects underway. They also agreed to elect a Committee Chairperson. Steering Committee members attending the meeting are listed in **Attachment A**.

▪ **SWAT Program Overview**

FHWA Engineer, John Harding presented an overview to the group, highlighting the Steering Committee's role. The Steering Committee is expected to provide input on the program plan, tool development, outreach and data collection. Harding explained that each Steering Committee member will be sent a "scope of work" to review and provide input. The group agreed to e-mail responses to FHWA within two to three weeks after receiving the document. The SWAT activities schedule and information on several work zone traffic impact analysis tools are included as **Attachment B**.

The group discussed various definitions on what constitutes a work zone delay. In Wisconsin a perceived delay is if traffic flow is less than the speed limit of 55. In California a delay is determined if traffic flow is delayed 30 minutes. Some group members agreed that if the speed of traffic is less than posted it is a delay. Later discussions resulted in a consensus that 30 minutes was a reasonable measure for delays.

▪ **QuickZone Scope Overview**

Representatives from Mitretek Systems presented the group with information on an analytic tool titled “QuickZone” developed to estimate and quantify work zone delays. The group was asked to provide input to assist with further development of QuickZone. The tool’s purpose is to: quantify corridor delay resulting from capacity decrease in work zones; identify delay impacts of alternative project phasing plans and; support tradeoff analyses between construction costs and delay costs. Karl Wunderlick and James Larkin from Mitretek Systems made the presentation to the Committee. Emphasizing that practitioner input was needed to make sure that the QuickZone is useful and gives the information needed. Mitretek Systems will create a questionnaire to get more information from practitioners. Then deliver it to FHWA for distribution. The first version of QuickZone will be available to the Committee July 2000. The next version is due October 2000 with the final product scheduled for a March 2001 release. This tool is for quick and flexible estimation of work zone delay in all four phases of the project development process:

- Policy
- Planning
- Design
- Operations

Computing Requirements

- Any windows-based computer with Microsoft Excel '97
- One-hour to setup new network
- Under three-minutes to estimate delay

Network Data

- Node data (X-Y coordinates)
- Possible Sources: GIS/TDM
- Link Data (capacity/demand)

Demand Data

- Average Daily Travel
- Daily and seasonal distributions

Tool Requirements

- Quantify life-cycle delay costs, e.g., 15-vs. 30-year pavement rehabilitation
- Examine impacts of construction staging
- Assessment of permanent or temporary alternate routes for delay reduction
- Assessment of travel demand measures and other delay mitigation strategies
- Support the setting of work completion incentives
- Identify impact of work zone delay policies
- Suitable for application in both urban and inter-urban settings.

Wunderlich said the system shows performance indicators that allow the contractor and the client to look at several scenarios to come up with an acceptable plan. The Scope of Work for QuickZone is included as **Attachment C**.

**Comments/Questions**

- Does the tool consider Diversion? Yes, the demand is redistributed.
- Can input perceive amount of Diversion? Yes, user can define components.
- What terms do you quantify delay? It starts off in hours but if user does not want hourly soft costs then user can customize for life costing for the project.
- The tool addresses density and duration but does not tell us about construction quality. Wunderlich confirmed that durability is part of the program but the group might want to do a sensitivity analysis on durability.
- Can you interface another behavior model with this program? Yes we can design this but would like to have examples of other models. Wunderlich said they would like the program to provide a general interface.
- Do we want to keep this simple or do we want an expert user? Group consensus was “keep it simple”
- Does the tool include peak spreading? There is the concept of peak spreading used in the program. Before Demand/After Demand already redistributed.
- Will the software application address arterial streets? Yes, eventually the arterial issue will be addressed.

▪ **State Projects**

The Georgia Tech School of Engineering has a project with CalTrans on Levels 5 and 6 of the Work Zone Decision Tool Support Levels.

Level 5: Total cost = improvement cost + wz traffic mitigating cost + specific strategy delay cost

Level 6: Total cost = improvement cost + wz traffic mitigation cost + specific strategy delay cost

For various time periods

Georgia Tech Professor John Leonard said the tools they are developing will provide information on a section of the freeway with multiple changing demands, capacity, and off ramps. He said the tool is developed to evaluate delays and travel time. It will look at propagation and provide additional methods of effective strategies for work zone scheduling during peak hours. The tool will further allow multiple Q's to be evaluated. As well as information on Q delays on on-ramps and spill back on off-ramps. He said a version of this tool is available on the web now. Professor Leonard said he would send John Harding a copy of the scope of work for this tool.

FHWA Engineer, Jim Sorenson pointed out that contractors need better tools. He said more initiatives like the Georgia Tech project are needed for taking engineering know how and creating simple tools to help in

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construction. This is important as we start to shift the workload to the contractor who then becomes more responsible to the customer on the road, Sorenson said.

Patrick Fleming with the Wisconsin Department of Transportation shared his experience with a work zone project. Wisconsin managed a 17-mile project on I-94 with the average daily traffic of 25,000. The work zone issues dealt with lane closures in a rural section that was heavily traveled on weekends by tourists. The state closed one-lane during the week and opened four lanes on weekends.

### **Closing**

Brian Deery, representing the Associated General Contractors said he would like to see more issues discussed related to the work zone safety needs. He said he is concerned with slowing traffic down in the work zone not just speeding it up. Sorenson said delays are related to safety and there should be a balance. Harding added that seven safety factors are included in the program overview.

Ghaman closed the meeting by thanking participants for attending and showing their commitment to the program. He polled the group on preferences for the next meeting place and time. It was tentatively set for October 2000 in Chicago.

**ATTACHMENT A**

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**Attachment B**

**SWAT Program Overview  
Preliminary Data Collection and Test Sites  
Tools**

This attachment is not available electronically.

**Attachment C**

**QuickZone Scope of Work**

This attachment is not available electronically.